Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 17. May, 1915. No. 197.

SOME ALGAE FROM THE CHINCHA ISLANDS.

Frank S. Collins.

Dr. M. A. Howe has recently published an interesting and thorough paper on the marine algae of Peru [1] based chiefly on collections made from 1906 to 1908 by Dr. Robert E. Coker, while acting as fisheries expert for the Peruvian government. In addition to this collection Dr. Howe has included in his paper all the earlier records for the Peruvian coast, revising these records by inspection and comparison of original specimens. The result is a paper of 185 pages with 66 plates; this coast, in regard to which algological data were few and far between, thus becomes one of the best known regions, outside of the "home regions" of the North Atlantic and the Mediterranean.

In looking over Dr. Howe's book, there was recalled to my mind a small collection of algae from the Chincha Islands, off the Peruvian coast, which I looked over in 1895, but had hardly thought of since. In that year the late Prof. Francis L. Harvey sent me from the Maine State College (now the University of Maine) at Orono, a lot of algae for determination; most of them were from the coast of Maine, and were familiar species, but there was among them this lot of about 15 sheets, referred to as "Chincha Islands specimens" but with no record as to collector or date. More than half were well known species, a few I could name only with a doubt, and as to two I could give no name whatever; this I find on going back to the memoranda made at the time. So much having been recalled to my mind, I wrote to Prof. M. A. Chrysler, now in charge of botany at the University

[1] Marshall Avery Howe, The marine algae of Peru; Mem. Torrey Bot. Club, Vol. XV, p. 1, 1914.

of Maine, and he was kind enough to send me the specimens, which fortunately had been kept by themselves, not distributed in the general herbarium; the two specimens to which I could give no name could not be found, however. On examining the others and comparing them with Dr. Howe's paper, I felt that the safest way would be to submit them to Dr. Howe, which I did, and he very kindly examined them. Before giving the list with the results of his examination, I will state what I have been able to learn of the circumstances under which these plants were collected; I think they will be of interest, especially as they give an incidental view of some former conditions in New England, now quite passed away.

The M. S. C. label on the cover containing the specimens has the record "These algae were collected at the Chincha Is. in 1865 by Mrs. J. H. Nickerson Bangor and donated by her to the college." I think this is in Prof. Harvey's writing. No one now at the College remembers anything about the matter. Some friends of mine in Bangor were obliging enough to make inquiries, and at their suggestion I wrote to Capt. J. H. Nickerson at South Orrington, Maine; I received an interesting reply from J. E. Nickerson of that place, who was not the man in question; he did however once know a Captain John Nickerson of West Bucksport, a "Deep water man" of 40 or 50 years ago. Both the captain and his wife were dead long since, but Mr. Nickerson suggested my writing to Capt. William S. Higgins of Morse & Co., Bangor; Capt. Nickerson's wife was a sister of D. J. Morse of that house, and Capt. Higgins's wife her niece. I found Capt. Higgins extremely kind in trying to get the information I wanted, but at first it seemed hopeless. D. J. Morse was dead, as well as his sister and his brother-in-law; no one could be found who remembered anything about the collections. Finally however, Capt. Higgins was successful to a certain extent, and I learned that Capt. J. K. (not J. H.) Nickerson was at the Chincha Islands in 1862, in command of the bark "Evening Star"; he sailed from the islands to Antwerp and there sold the vessel, returning to New York with Mrs. Nickerson by steamer. After returning he had a ship built for him at Brewer, the "Jennie Hight"; this ship was lost on the Florida coast, on her first voyage.

In those days and for many years before, New England captains and their ships were to be found in all quarters of the world; and often their wives went with them, and this is not the only case where the

woman, when the ship was lying in some foreign port, would mount a little lot of pretty "sea mosses" just as she had done at Pemaquid or Cape Elizabeth, or some other favorite locality at home. We cannot claim it as an exclusively American habit; some readers of RHODORA may recall a note of mine [1] giving account of algae collected by a Norwegian sailor, Axel Moe, including some collected by his sister, Ragnhild Moe, accompanying him on one of his voyages. It is a pleasant idea, not going from home to these places, but taking home with one to them. But it was not all pleasure; incidental remarks in the letters I have received from kind friends who have helped me in looking up this matter show another side. "His second wife was badly injured when he lost the ship D. J. Morse." "My daughter was born, on board ship, at Independencia Bay, about thirty miles south of the Chinchas, 1875." The conditions under which these things happened are now all gone by; Capt. Higgins writes me "I commanded ships twenty years, and have been to the Chincha Islands twice. Since leaving the sea I have been located here in the lumber business, and my past sea life and the old Chinchas seems like a dream."

It is probable that the few specimens now in question are not all that Mrs. Nickerson collected; I have gone into some detail as to my investigations in the hope that some one reading this note may recall some similar collection. The specimens are mounted on good heavy paper, almost cardboard; they are neatly mounted, and are in so good condition that minute epiphytes on them can be examined and determined. The following is the list: —

ULVA sp. Too fragmentary for specific determination.

ENTEROMORPHA PROLIFERA (O. F. Müll.) J. Ag.

ENTEROMORPHA INTESTINALIS (L.) Grev.

ENDODERMA STRANGULANS M. A. Howe, in *Cladophora fascicularis.*

CLADOPHORA HARIOTINA M. A. Howe. Fragmentary.

CLADOPHORA FASCICULARIS (Mont.) Kütz. A rather open form, with long, virgate, but rather flexuous branches.

*CHAETOMORPHA LINUM (O. F. Müll.) Kütz. Fragmentary, but fairly characteristic.

*ECTOCARPUS MITCHELLAE Harv. With plurilocular sporangia (meiosporangia) somewhat smaller than usual. A plant of wide range, common on the shores of the Atlantic from Great Britain to

[1] A sailor's collection of algae, RHODORA, Vol. VI, p. 181, 1904.

the Canaries and from Massachusetts to Florida, and on the coast of California; but this appears to be the first record for South America; this distribution assumes the identity of *E. Mitchellae* Harv. and *E. virescens* Thuret which seems to be now fairly well assured. The history of this species is of some interest; published by Harvey in 1852,[1] on a plant collected at Nantucket by Miss Mitchell, nothing more was known of it for a long time. Farlow [2] says "Only known from the description and plate in the Nereis." The next mention is ten years later [3] when specimens collected by Miss Laura Jernegan at Edgartown were referred to this species, and attention was called to its resemblance to *E. virescens* Thuret. The latter name was used, but as *nomen nudum* only, by Flahault [4] and by Holmes and Batters,[5] but the actual publication was in a paper by Sauvageau.[6] In this paper Sauvageau describes the two forms of plurilocular sporangia found in this species, indicating relationships not before known in the brown algae. In a later paper [7] Sauvageau considers the Edgartown plant to be probably the same species but thinks proof is needed of its identity with *E. Mitchellae* Harv. Börgesen [8] has compared authentic material of both species, finding only such minor differences as are to be expected in a plant as widely distributed as this. *E. Mitchellae*, with meiosporangia, was distributed from Edgartown as No. 321 in Collins, Holden & Setchell, Phycotheca Boreali-Americana, and from Bermuda as No. 1921; with megasporangia from La Jolla, California, as No. 671; megasporangia have also been found at Bermuda.

CHONDRUS CANALICULATUS (Ag.) Grev. With cystocarps; quite like the large, little dissected plants collected by Dr. Coker at the same locality.

GIGARTINA CHAMISSOI (Ag.) J. Ag.

[1] W. H. Harvey, Nereis Boreali-Americana, part 1, p. 142, Pl. XII. G, 1852.
[2] W. G. Farlow, Marine algae of New England, p. 72, 1881.
[3] F. S. Collins, Notes on New England marine algae, V. Bull. Torrey Bot. Club, Vol. XVIII, p. 335, 1891.
[4] C. Flahault, Herborisations algologiques au Croisic, Bull. Soc. Bot. de France, Vol. XXXV, p. 381, 1888.
[5] E. M. Holmes & E. A. L. Batters, A revised list of the British marine algae. Annals of Botany, Vol. V, p. 79, 1892.
[6] C. Sauvageau, Sur l'Ectocarpus virescens Thuret. Jour. de Bot., Vol. X, p. 98 (p. 37 of reprint) 1896.
[7] C. Sauvageau, Note préliminaire sur les algues marines du golfe de Gascogne, Jour. de Bot., Vol. XI, p. 177 (p. 12 of reprint) 1907.
[8] Börgesen, The marine algae of the Danish West Indies, part 2, Phaeophyceae, p. 129, 1914.

GIGARTINA LESSONII (Bory) J. Ag. These two species are represented each by a well developed typical plant, with cystocarps.

* GRACILARIA CONFERVOIDES (L.) Grev. A long, slender, little branched form; tetrasporic and cystocarpic specimens on the same paper. There appears to be no record in print of the occurrence of this species on the coast of South America, but Dr. Howe reports having received two sterile specimens from Valparaiso, Chile, which he places under this species.

RHODYMENIA CORALLINA (Bory) Grev. In this specimen the frond is flat, even to the point of attachment, very regularly dichotomous and flabellate; there is no trace of the terete stipe occasionally found in this species, always in *R. flabellifolia* (Bory) Mont. The cystocarps, however, are distinctly apiculate, similar to the cystocarps in the plants assigned to *R. flabellifolia* by Howe, while in the plants assigned by him to *R. corallina* the cystocarps were not at all apiculate. It would seem then that cystocarpic characters cannot be depended on for the distinction of the two species.

* PLOCAMIUM COCCINEUM (Huds.) Lyng. forma **compactum** f. nov. ramificatione ad omnes partes densa; axibus principalibus mox indistinctis; pinnulis brevibus, basi contiguis; ramuli fertilis pedicello brevi sporophylla brevia, numerosa, dense fasciculata, ferente.

Branching dense throughout; main axes soon indistinct; pinnules short, contiguous at base; fertile branchlets with short pedicel and densely packed, short sporophylls. Chincha Islands, Peru, Mrs. J. K. Nickerson. Type in herb. University of Maine, Orono, Maine.

If compared with the slender form of *P. coccineum* common in Europe, the present plant would seem amply distinct, specifically, but there is a great variety in habit even in European plants, as will be seen by comparing the figures by Turner,[1] Greville,[2] and Harvey.[3] The first two represent the slender form, the last the broader form; the Californian plant resembles the latter, and like some other species common to Europe and California, is a larger and somewhat ranker plant than the European. Forma *compactum* agrees with the Californian plant in the breadth of the branches of the various orders, but the branches divide more frequently, the branch being often of the same size as the axis, and giving a subdichotomous appearance. In

[1] Dawson Turner, Fuci, Vol. I, p. 130, Pl. LIX, 1808.
[2] R. K. Greville, Algae Britannicae, p. 98, Pl. XII, 1830.
[3] W. H. Harvey, Phycologia Britannica, Pl. CLXXV, 1846–51.

the Californian plant there are usually a few long virgate axes; in forma *compactum* the main axes are soon lost among the frequent forkings. The tetraspores are as usual borne in transformed ramuli, but instead of a few, often only two or three, lanceolate sporophylls, we have a dense cluster, the sporophylls often overlapping, occasionally so numerous that the original formation in one plane is hardly distinguishable. The color is a dark, dull purplish red.

P. coccineum has a wide but peculiar distribution. In Europe it ranges from the Faroe Islands to the Canaries and throughout the Mediterranean; in America it is known to occur from Vancouver to the Mexican boundary, at the Galapagos Islands, and on the coast of Chile. I can find no certain record of its occurrence on the American shore of the Atlantic. Harvey,[1] after the record of the California locality, adds "Boston Bay, Miss Hawkshurst." Bailey[2] gives "Mass., Rev. J. L. Russell." Hooper,[3] has "Lynn, Massachusetts." I have a specimen marked "Plocamium coccineum Salem and Cohasset, Mass., J. L. Russell." The specimen is a small scrap of *Ceramium rubrum* (Huds.) Ag.; it is a peculiar form, with many short, often curved ramuli, set in secund series of three or four, really resembling some of the more slender forms of *P. coccineum*. A glance with a pocket lens, however, shows at once the articulate structure. Harvey continually refers in the Nereis to the Hooper and Bailey collections, and when, as in the case of the species now in question, and also the "*Delesseria Hypoglossum*, Boston," "*Rhodymenia Palmetta*, Newburyport" and others of Hooper's list, Harvey makes no mention, we may safely conclude that he considered the determination wrong, or the record otherwise unreliable. Before the publication of the Nereis there was no text book for this country, and American collectors perforce made use of English manuals. As noted by Farlow[4] it is not uncommon to find *Euthora cristata* labelled *Plocamium* in the older collections; moreover I have seen in such collections specimens of European species marked with American localities, when character of paper and handwriting of name agreed with other European specimens in the same collection, the record of locality being in a different writing from that of the name. There is no occasion to

[1] W. H. Harvey, Ner. Bor.-Am., part 2, p. 153, 1853.
[2] J. T. Bailey, Notes on the algae of the United States, Am. Jour. Sci., Ser. 2, Vol. III, p. 84, 1847.
[3] John Hooper, Introduction to Algology, p. 24, Brooklyn, 1850.
[4] Marine Algae of N. E., p. 151, 1881.

suppose that there was any intentional deception, but allowance must always be made for the possibility of mistakes of this kind in older collections of amateurs, who have received specimens from foreign correspondents. I think we can safely ignore the "Boston Bay" reference, and consider that the species is not known on the western side of the Atlantic.

As regards the west coast of the Pacific, De Toni[1] records *P. coccineum* "Hab. ad Enoshima (K. Okamura n. 18)," but later[2] under *P. coccineum* makes no mention of Japanese localities and no reference to the earlier paper under this species. Okamura[3] figures *P. leptophyllum* Kütz. var. *flexuosum* J. Ag. with reference to De Toni, Syll. Alg., Vol. IV, p. 589, and synonym *P. coccineum* var. *flexuosum* Harvey. It seems safe to conclude that *P. coccineum* is limited to the east shore of each ocean. As to the suggestion of De Toni, l. c., p. 591, that the Californian plant should be placed under *P. leptophyllum* Kütz., it is negatived by the fact that the plants distributed as P. B.-A., No. 994. b, representing the broad form common on the California coast, have branched sporophylls, in the form characteristic of *P. coccineum*, not the simpler form of *P. leptophyllum*.

NITOPHYLLUM CRYPTONEURON (Mont.) De Toni. A small frond, attached to *Polysiphonia*.

* POLYSIPHONIA sp.? A rather coarse form with short segments and four pericentral cells. In habit it somewhat suggests *Streblocladia camptoclada* (Mont.) Falk., but is evidently monopodial. I do not recognize it by the habit, and it adheres so closely to the paper that microscopic examination is difficult.

PTEROSIPHONIA DENDROIDEA (Mont.) Falk. A well developed plant, about 10 cm. high, which is rather large for this species; not in fruit.

STREBLOCLADIA SPICATA M. A. Howe. "Primary branches longer and better developed than in the type." Note by Dr. Howe.

PLEONOSPORIUM VENUSTISSIMUM (Mont.) De Toni. With polyspores.

CERAMIUM RUBRUM (Huds.) Ag. A small plant, about 3 cm. high, with tetraspores. Cortication uniform, segments short, apices strongly forcipate, but not involute.

[1] G. B. De Toni, Phyceae Japonicae novae, Mem. Roy. Ist. Venet., Vol. XXV, No. 5, p. 29, 1895.

[2] Id., Sylloge Algarum, Vol. IV, Sect. II, p. 577, 1900.

[3] K. Okamura, Icones of Japanese algae, Vol. III, p. 14, Pl. CIII, figs. 6–7, 1913.

CERAMIUM CLAVULATUM Ag. A well developed, not much branched form.[1]

The five species starred above are additions to Dr. Howe's list for Peru. I much regret not being able to learn any more about the collector, nor as to whether any other specimens of her collecting are in existence. The character of these specimens is far above the standard of the ordinary "moss collector." There are two species of *Gigartina*, each represented by a single specimen in full cystocarpic fruit; a single specimen of *Gracilaria*, with both cystocarpic and tetrasporic plants; two specimens of the *Plocamium*, one cystocarpic, the other tetrasporic. Very few collectings average as well as does this, for the scientific usefulness of the specimens.

In conclusion, my thanks are due to Prof. Chrysler for the opportunity to re-examine the specimens; to Dr. Howe for his examination of them and his notes; and to all who have helped me in the search for information as to the collector.

NORTH EASTHAM, MASSACHUSETTS.

TWO VARIATIONS OF SILENE ANTIRRHINA.

M. L. FERNALD.

SILENE ANTIRRHINA L., forma **Deaneana**, n. f., internodiis non glutinosis.— Occasional throughout the range of the species. TYPE: recently cleared land near Winter Pond, Winchester, Massachusetts, June 22, 1913, *Fernald & Long*, no. 9494 (herb. New England Botanical Club).

This form, discussed in some detail by Mr. Walter Deane in RHODORA, xii. 129–131 (1910), is so constant in the colonies where it occurs that it merits some designation; but differing from the typical form of the species only in the absence of the glutinous band found on some of the upper internodes in true *S. antirrhina* and apparently not hav-

[1] In this connection I would note that an authentic specimen of *Ceramium miniatum* Suhr in my possession shows that the Peruvian plant mentioned by Howe, p. 157, is different; Dr. Howe agrees with me as to this, and expects to take up the matter later.